3D Studio Max Plug-in

User Manual

Philips 3D Solutions

Document Information

Info	Content
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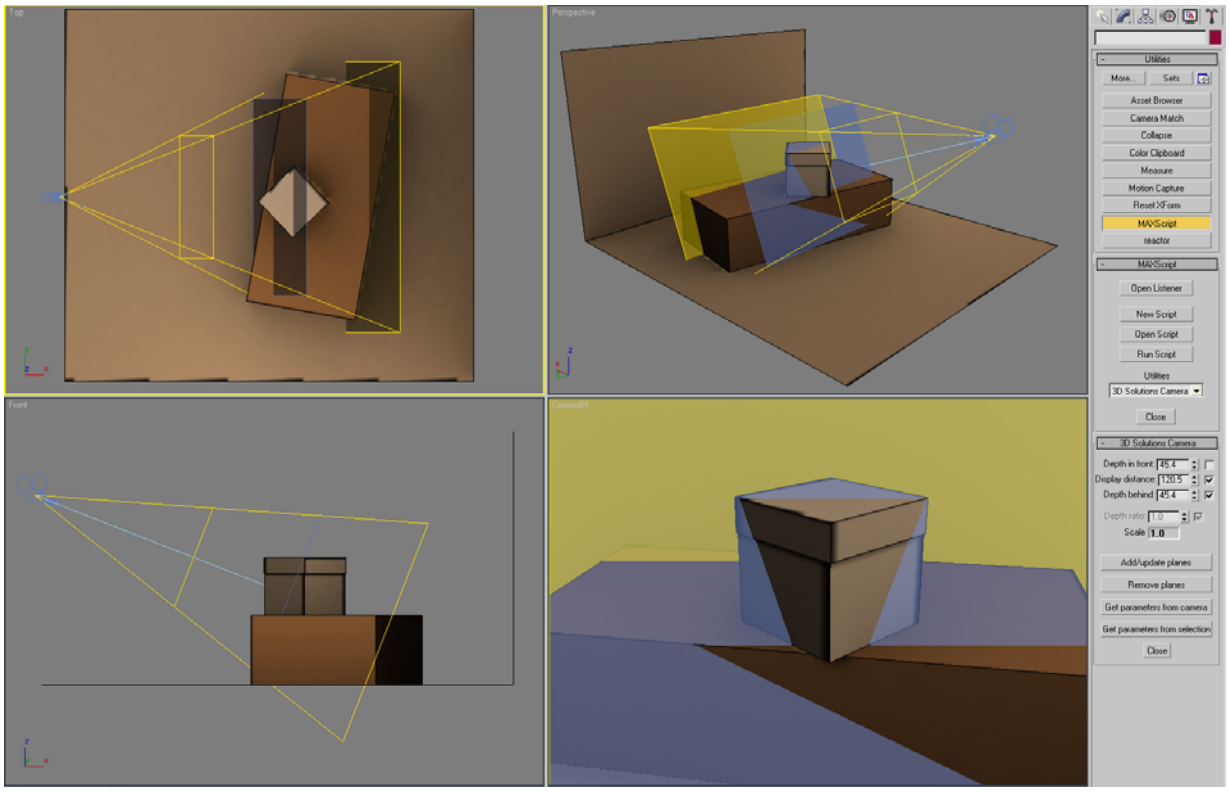
1 Introduction

The 3ds Max plug-in from Philips 3D Solutions allows artists to save rendered frames including depth information to bitmap files with the .B3D file extension. The individual 3D bitmaps can easily be converted to a video sequence that can be played back with the 3D Solutions Media Player. Depth information that normally would be discarded is retained, allowing the 3D Display to display the 3D bitmap.
With the use of the 3ds Max plug-in also the advanced new content format called Declipse is supported (see Section 5).

A utility script accompanies the plug-in. The script helps artists working in 3ds Max to see what a scene will look like when displayed on a 3D Display. The script places three planes perpendicular to the camera view. These planes correspond to the maximum depth in front of the screen, the maximum depth behind the screen, and the screen plane itself. The editor can place the planes in the scenes and thereby easily position objects in front of or behind the screen. After the planes are positioned, the plug-in can be used to render immediately to a 3D bitmap.



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2 Installation

There are different installers, each for a specific version of 3ds Max that enables you to install the plug-in. Just click on the executable of the version needed and follow the instructions on screen. Make sure that on selection of the destination directory you select the base directory of 3ds Max, e.g. if you have installed 3ds Max installed in c:\3dsmax you select this directory.

The version number of the plug-in can be obtained by clicking “Setup…” in the “Render Output File” menu. See Setup on page 14.

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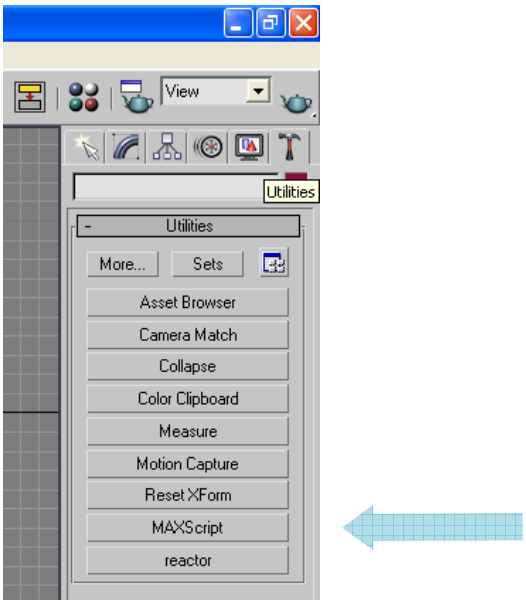
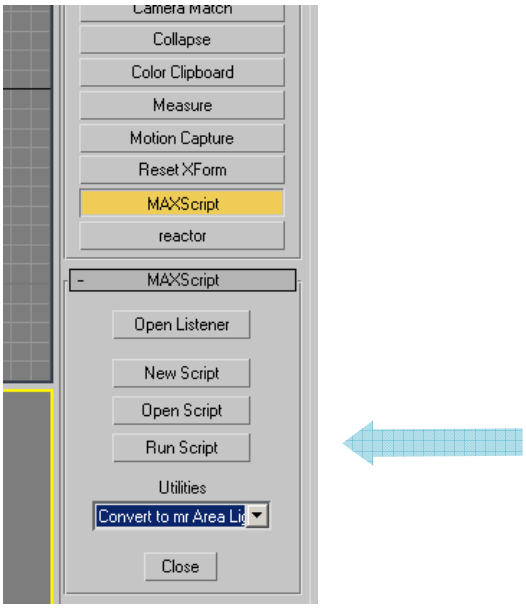
3 Running the utility script

- Start 3ds Max.



- Press the "MAXScript" button in the utilities panel.



- Press the "Run script" button in the MAXScript rollout.

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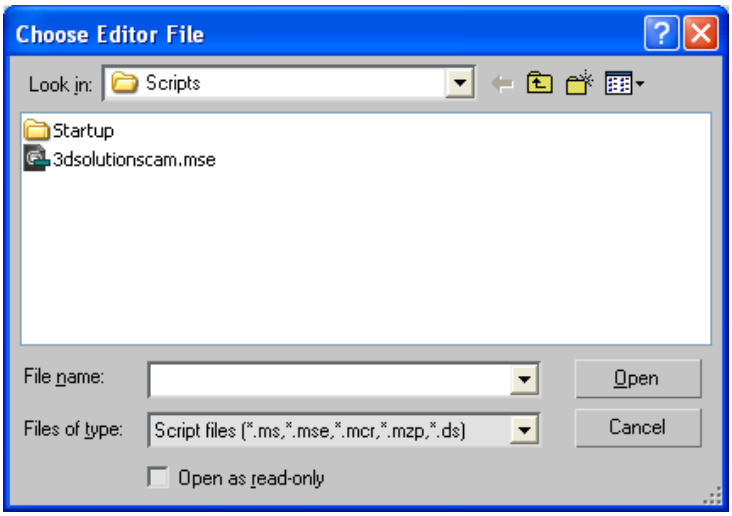
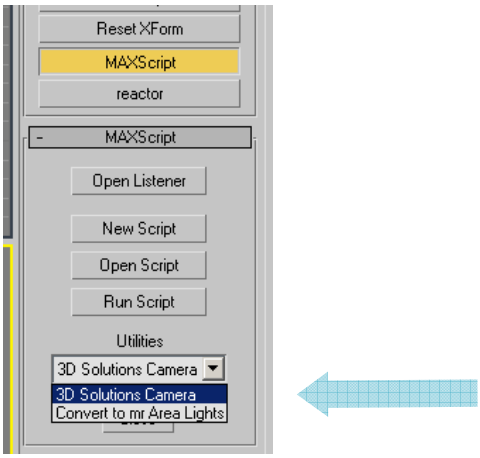
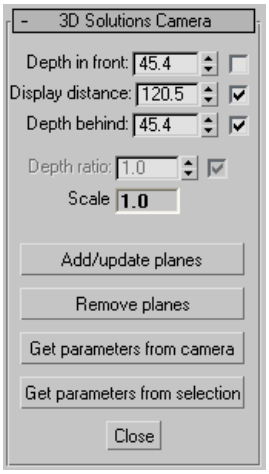


- Select and open "3dsolutionscam.mse" located in the script directory.



- Reselect “3D Solutions Camera” from the utilities drop-down box by pressing the blue selection.



The 3D Solutions Camera rollout should appear.

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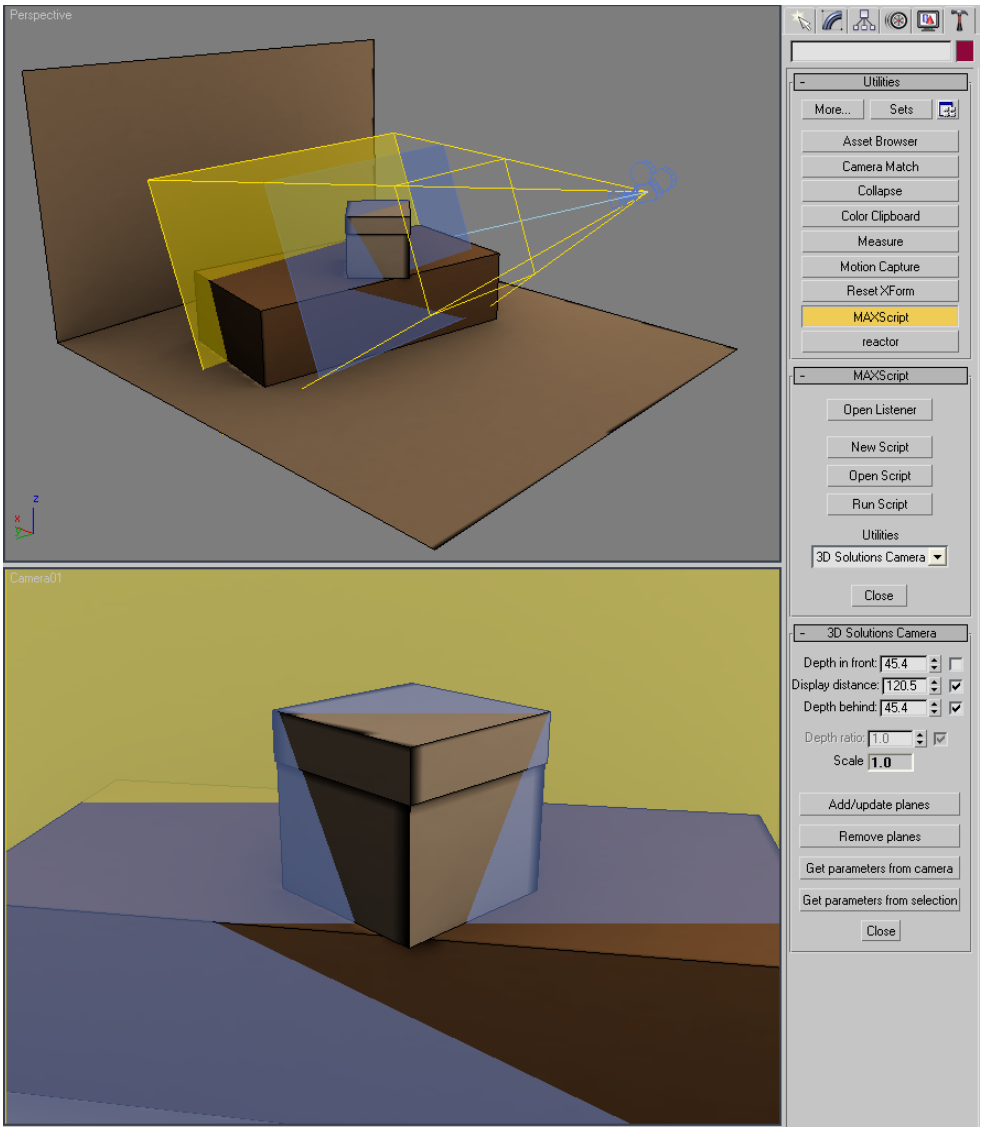
3.1 3D Solutions camera

At any time during creation of a scene a camera can be changed into a 3D Solutions camera. The 3D Solutions camera differs from a normal camera in that it has three planes that will be used by the output plug-in to properly calculate depth information when the scene is being rendered.

To create a 3D Solutions camera, select a camera and press the "Add/update planes" button. It is also possible to revert this by pressing "Remove planes". The camera is renamed to include a "3DS_" prefix so it can be distinguished from other cameras that may be in your scene.



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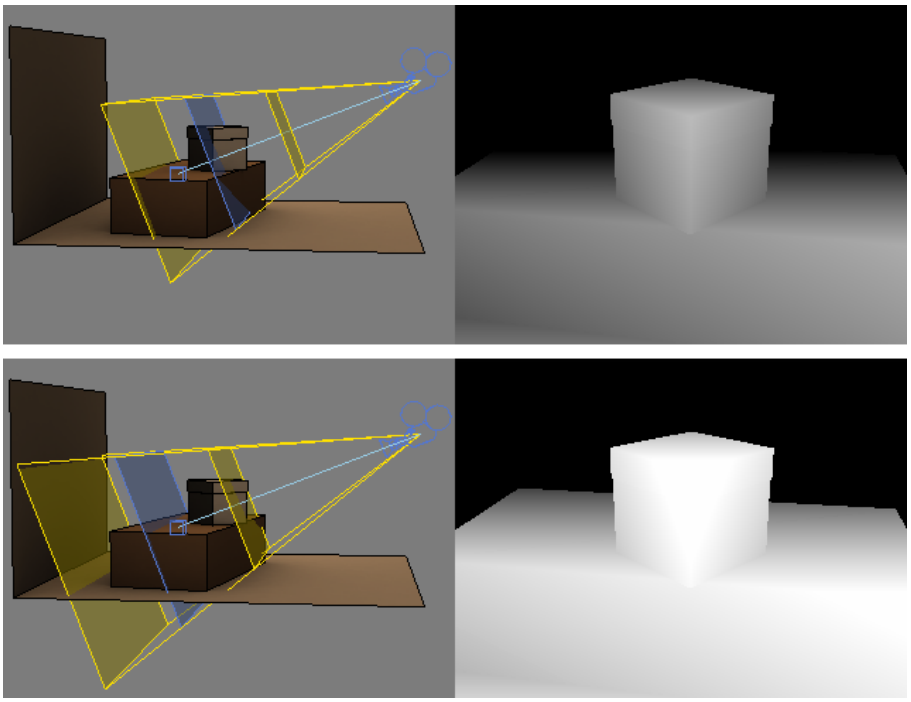
3.2 Camera plane parameters

The first three parameters that can be modified with the camera script are “Depth in front”, “Display distance” and "Depth behind".

The display distance is the distance from the camera to the middle or display plane. Objects on the display plane will be observed as being at the same distance from the user as the 3D display itself.

Depth in front is the distance between the display plane and the nearest of the three planes of the 3D Solutions camera. This corresponds to the maximum distance that objects will 'come out of the screen'. Any objects closer to the camera than the nearest plane will appear to be at the same depth as the depth in front plane.

Depth behind is the maximum distance behind the display at which objects can be displayed. Any objects further away than this furthest plane will appear to be at the same depth as the depth behind plane.



By changing these parameters the distribution of objects in a scene over the available depth range can be adjusted.

How far objects can appear to be in front of or behind the screen depends on the type of display. Only the ratio between depth in front and depth behind is relevant for scene creation, because the display allows the depth effect to be scaled around the display plane. This ratio is the fourth parameter of the 3D Solutions camera and is fixed at 1.0 for this version of the product.

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If a scene already contains a 3D Solutions camera, it is possible to extract plane parameters from it by selecting it and pressing "Get parameters from camera".

Alternatively, the “Get parameters from selection” button can be used to calculate plane parameters based on selected objects. This can be useful if the default plane parameters are on a completely different scale compared with the scene geometry. The “Depth in front” and “Depth behind” values will be based on the size of the bounding box of all selected geometry. If the selection also contains a single camera, the “Display distance” will be set to the distance from this camera to the centre of the bounding box. If no camera is selected, the script will have no way of determining where the camera will be in relation to the geometry and “Display distance” will be chosen more or less arbitrarily.

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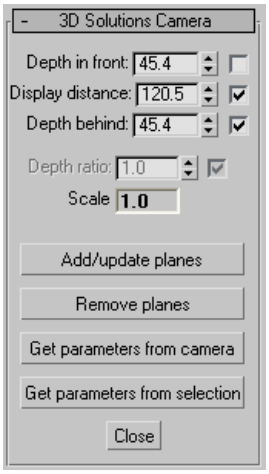
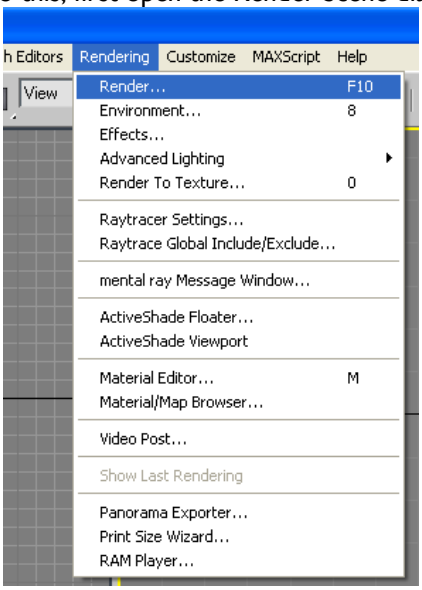
4 Rendering

When a scene is ready to be rendered, the parameters of the camera must be transferred to the output plug-in.



To do this, first open the Render Scene dialog by pressing F10 or via:



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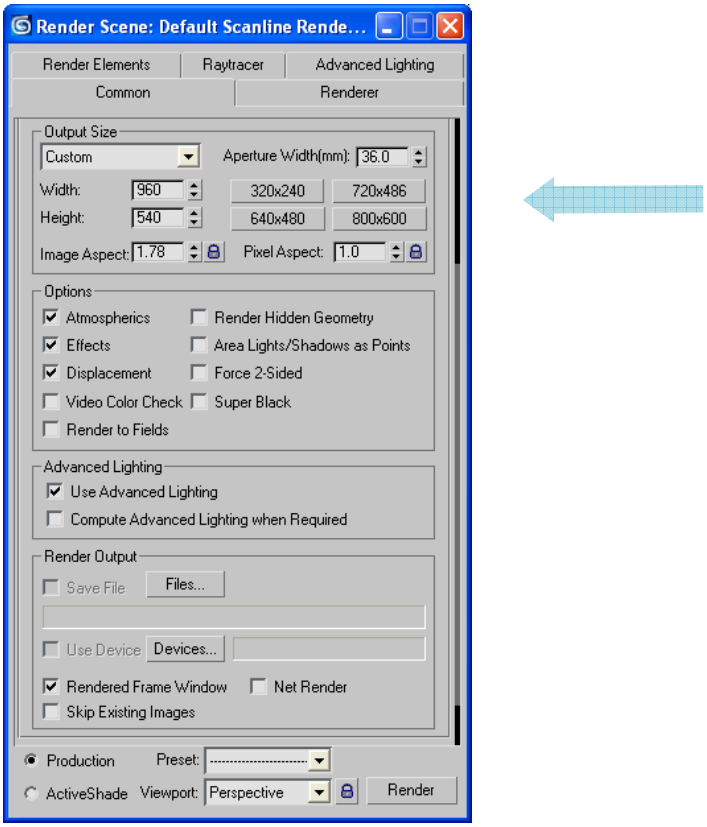
Tip:
For the best result on the 3D display set the Output Size height and width to 800 x 600 (for a 20” 3D display) and to 960 x 540 (for a 42” 3D display). Accept the change in Image Aspect if 3ds Max suggests so.

Press the "Files…" button to select an output file.



Select a file and set the file type to "3d BMP File (*.b3d)" to save rendered output.

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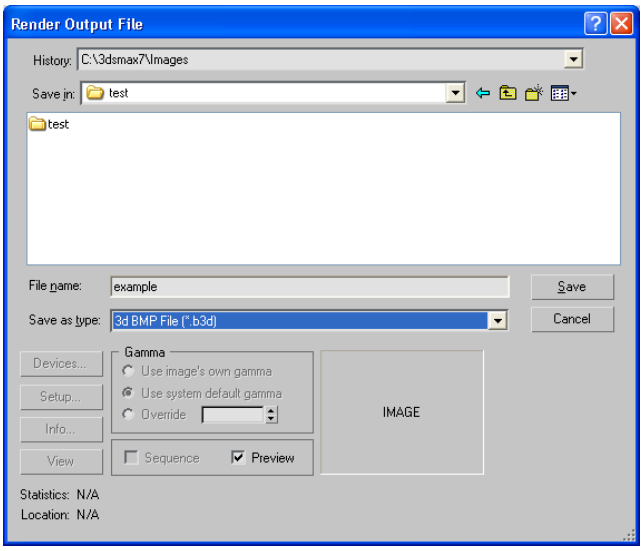
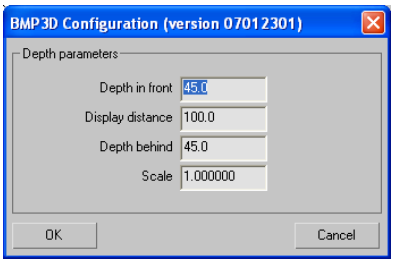


Enter the plane parameters into the setup dialog of the output plug-in. This dialog will appear automatically the first time you save a 3D bitmap file and can be reopened later by clicking "Setup...".



In addition to the parameters that will be used when saving rendered output, the setup dialog also shows the version number of the plug-in. In this example the version number is 07012301. Please note that the dialog doesn't show which 3ds Max version you are using.

Press OK to close the setup dialog when done.

Finally press "Save" in the "Render Output File" dialog and continue as you normally would.

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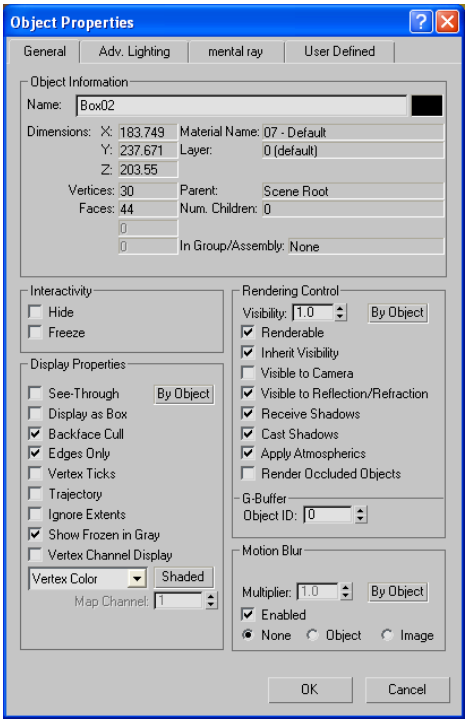
5 Advanced Usage: Declipse

Declipse enhances the 3D viewing experience by enabling looking behind objects. It therefore gives a higher visual quality to the content by enabling the 3D display to render background information for occluded areas.

You need to make a selection in objects that belong to the background and objects that belong to the foreground. As a general first rule of thumb, objects which are (partially) occluded by other objects go in the background.
For the best result, you should only select those objects for the background that have a relatively large distance to objects that belong in the foreground layer. Also make sure that background objects do not intersect with foreground objects to reduce the possibility of visual artefacts.

When generating Declipse 3D bitmaps in 3ds Max, the basic workflow stays the same as previously described, but some additional processing has to be done.

- Create the scene as you normally do.
- Select all objects belonging to the foreground and disable the object property 'Visible to Camera' (under Rendering Control) for these objects.
  You can do this by selecting the objects, right click and choosing 'Object Properties'.



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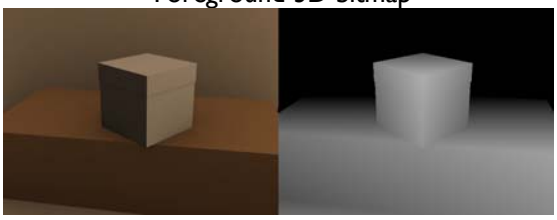
- Render the (background) 3D bitmap.
- Enable the object property 'Visible to Camera' for all objects that you have turned off earlier (at this point you have your original scene back).
- Render the (foreground) 3D bitmap (make sure you have set a different filename!).
- Use a video edit tool to generate a Declipse 3D bitmap.

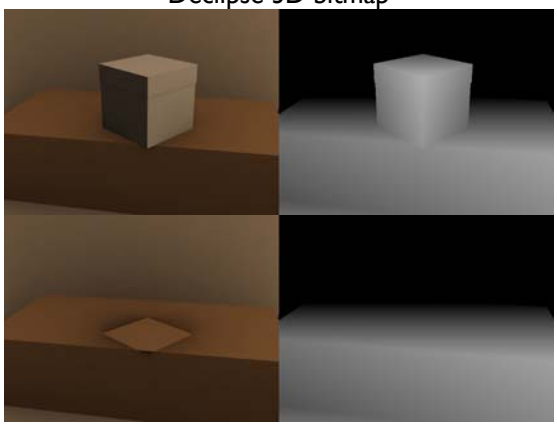
Below is an example of how this process works. On the upper left, the foreground 3D bitmap is shown, which basically, is just the whole scene. On the upper right (background 3D bitmap) the small box (foreground object) is removed. Both bitmaps have to be combined as shown to generate the Declipse 3D bitmap.

Foreground 3D bitmap



Background 3D Bitmap

Declipse 3D bitmap



Redundant parts in the background (bottom) layer may be omitted to enhance the coding efficiency.

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6 Limitations

- Because of a bug in 3ds Max 7 the scale of a camera does not affect the actual clipping of objects. It is therefore recommended not to change the default scale of 1.0.
- The output plug-in supports only one set of plane parameters, so those parameters should not be animated nor should different cameras be used in one rendering.
- Renaming the camera after it has been changed into a 3DS Camera is not recommended since it may break correct functioning.
- The plug-in for 3ds Max 9 works only with the 32-bit version of 3ds Max 9.

Note:

This plug-in has only been tested with 3ds Max versions 7, 8 and 9 (32-bit).

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